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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,899	10/09/2003	Brent E. Little	LO-22	4862
35723	7590	09/01/2005	EXAMINER	
LITTLE OPTICS, INC 9020 JUNCTION DRIVE ANNAPOLIS JUNCTION, MD 20701			WONG, TINA MEI SENG	
			ART UNIT	PAPER NUMBER

2874

DATE MAILED: 09/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/684,899		LITTLE, BRENT E.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Tina M. Wong		2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 July 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,6-10 and 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,6,8 and 10 is/are rejected.
- 7) ☒ Claim(s) 2,7,9 and 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6, 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2003/0053756 to Lam et al in view of U.S. Patent Application Publication 2003/0044118 to Zhou et al.

In regards to claim 1, Lam et al discloses a mode shape transformer (3), also called a spot size converter, having an input end and an output end supporting an input fundamental optical mode having a first spot size, the output end supporting an output fundamental optical mode having a second spot size, the first spot size being smaller than the second spot size, the composite waveguide further comprising a first waveguide layer (6) and a second waveguide layer (4) with a width that laterally tapers (5) down between the two ends. (Figure 1) But Lam et al fails to disclose a means for fabricating a second waveguide layer contiguously on top of the first waveguide layer. However, Lam et al further discloses the upper and lower waveguides *could* be separated by a cladding region, but does not have to be separated by a cladding region. Additionally, Zhou et al discloses as prior art a mode size conversion with two waveguides, one laterally tapered, where the two waveguides are placed contiguously to each other. (Figure 6) Since Lam et al and Zhou et al are both from the same field of endeavor, and Lam et al discloses the two waveguides does not have to be separated by a cladding layer and Zhou et al shows two waveguides placed one on top of another as prior art, it would have been obvious at the time the

invention was made to a person having ordinary skill in the art to have placed the waveguides on top of one another as disclosed by Lam et al and shown by Zhou et al.

In regards to claim 6, Zhou et al (figure 6) and Lam et al (figure 7) both further discloses providing an input fiber. Lam et al then further discloses a first waveguide layer having a width at the input end matching that of the fiber spot size and a second waveguide layer having a width matching that of the fiber spot size. However, neither Zhou et al nor Lam et al discloses the input fiber to have a predetermined spot size. However, in order to manufacture the fiber, a spot size must first be determined and therefore would have a predetermined spot size.

In regards to claim 8, Lam et al discloses a means for depositing a first waveguide layer (6, 21) on a substrate (22), a means for fabricating a second waveguide layer (4, 24) where the second waveguide layer has a width that is laterally tapered (5). Lam et al further discloses the upper and lower waveguide to be fabricated by deposition and then etched. But Lam et al fails to disclose a means for fabricating a second waveguide layer contiguously on top of the first waveguide layer. However, Lam et al further discloses the upper and lower waveguides *could* be separated by a cladding region, but does not have to be separated by a cladding region.

Additionally, Zhou et al discloses as prior art a mode size conversion with two waveguides, one laterally tapered, where the two waveguides are placed contiguously to each other. (Figure 6) Since Lam et al and Zhou et al are both from the same field of endeavor, and Lam et al discloses the two waveguides does not have to be separated by a cladding layer and Zhou et al shows two waveguides placed one on top of another as prior art, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have placed the waveguides on top of one another as disclosed by Lam et al and shown by Zhou et al.

In regards to claim 10, Lam et al further discloses depositing layers by chemical vapor deposition in order to fabricate the mode shape transformer.

***Allowable Subject Matter***

Claims 2, 7, 9 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In regards to claims 2 and 9, the prior art of record fails to disclose or reasonably suggest all of the limitations of the base claim, intervening claims and where the first refractive index value is the same as the second refractive index value.

In regards to claims 7 and 15, the prior art of record fails to disclose or reasonably suggest all of the limitations of the base claim, intervening claims and the sum of the first thickness of the first waveguide layer and the second thickness of the second waveguide layer is substantially the same as the input fiber spot size.

***Response to Arguments***

Applicant's arguments filed 26 July 2005 have been fully considered but they are not persuasive. Applicant argues the small mode waveguide is the bottom waveguide has a taper, which Lam et al does not. However, this argument does not reflect the claim language. In claim 1, the first waveguide layer is not claimed to include a taper.

Applicant further argues the taper in the second waveguide points towards the small spot waveguide as opposed to Lam et al. However, Applicant states that the mode transformer disclosed by Lam et al can work in the reverse direction. By working in the reverse direction,

the second waveguide's inputs and outputs would be reversed and therefore the second waveguide taper would point towards the small spot waveguide.

Applicant lastly argues Lam et al does not disclose depositing and a means for planarizing as method steps to form an optical mode transformer. However, the Examiner disagrees. As discussed in the rejection to claim 8 above, Lam et al does disclose a deposition method step and an etching method step in order to form the mode transformer.

### *Affidavit*

The Affidavit filed on 26 July 2005 under 37 CFR 1.131 has been considered but is ineffective to overcome the Lam et al and Zhou et al reference.

The evidence submitted is insufficient to establish diligence from a date prior to the date of reduction to practice of the Lam et al and Zhou et al reference to either a constructive reduction to practice or an actual reduction to practice. It is unclear between 5 September 2000 and 9 October 2002 (when the application was first filed in the USPTO) whether the invention was worked on with diligence. The last entry submitted by Applicant is dated 5 September 2000. Further evidence is needed to establish diligence.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

Art Unit: 2874

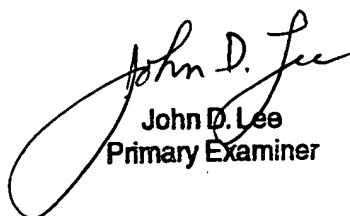
CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tina M. Wong whose telephone number is (571) 272-2352. The examiner can normally be reached on Monday-Friday 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
TMW

  
John D. Lee  
Primary Examiner